The Extended Binding Theory of Anaphors*

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0. Introduction

Chomsky (1981) proposed (1) as the binding theory for anaphors and pronominals.

(1) (A) An anaphor is bound in its governing category.
(B) A pronominal is free in its governing category.
   (i) \( \beta \) is a governing category for \( \alpha \) if and only if \( \beta \) is the minimal
   category containing \( \alpha \), a governor of \( \alpha \), and a SUBJECT accessible
   to \( \alpha \).
   (ii) A SUBJECT is AGR or the subject of an infinitive, a gerund, an
   NP or a small clause.
   (iii) \( \alpha \) is accessible to \( \beta \) if and only if \( \beta \) is in the c-command domain
   of \( \alpha \) and assignment to \( \beta \) of the index of \( \alpha \) would not violate
   \([\gamma \ldots \delta \ldots]\), where \( \gamma \) and \( \delta \) bear the same index.

Recently there have appeared some studies indicating that Chomsky's (1981) binding theory, as summarized above, is inadequate not only for languages other than English but also for English in some respects. These studies, however, usually have been concerned with the binding phenomena of certain specific languages, making fragmentary suggestions on possible revision of Chomsky's binding theory. The purpose of the present paper is to investigate some major cross-linguistic types of anaphor-binding phenomena and show how they can be accommodated in Chomsky's (1981) binding theory through some minimal parameterization of the theory. It will be shown that some of the radical variations in anaphor-binding phenomena across languages naturally follow from Chomsky's original binding theory, given a minimal parameterization in the binding theory. By way of motivating the parameterized binding theory of anaphors, we will also investigate some major cross-linguistic types of pronominal disjoint reference phenomena and show how they can be accounted for through a

* I have greatly benefited from numerous discussions on the earlier and current versions of this paper with many people, in particular with Noam Chomsky, Martin Everaert, Kenneth Hale, Morris Halle, James Higginbotham, Paul Kiparsky, Howard Lasnik, K. P. Mohanan, Henk Riemsdijk and Annie Zaenen. I am especially indebted to Noam Chomsky and K. P. Mohanan who shared many hours with me discussing various aspects of this paper and related matters. I have also benefited from comments on this paper by the participants of the 1983 GLOW meeting at York, England.
parameterization similar to the one for anaphor-binding phenomena. We will not discuss empty anaphors, i.e., NP-traces and PRO’s, but we will suggest how they will be incorporated in our parameterized binding theory.

1. Reciprocals

Reciprocals are anaphors with the least variation across languages. In fact, we may posit (2) for reciprocal-binding across languages.

(2) Reciprocal-Binding Principle

A reciprocal is bound in the c-domain of its c-commanding minimal SUBJECT.

The differences between (1A) and (2) are as follows. First, the governor of the anaphor is mentioned in (1A) but not in (2). Second, the notion of the governing category is used in (1A) but not in (2). Third, the i-within-i accessibility condition of SUBJECT is included in (1A) but excluded in (2). The first and second differences are not substantial ones. (2) does not mention the governor of the anaphor simply because it is not necessary to mention it; in other words, the c-domain of a’s c-commanding minimal SUBJECT automatically includes the governor of a. (2) does not use the notion of the governing category, but some notion of binding category is still implicit, i.e., it uses the notion “the c-domain of the anaphor’s c-commanding minimal SUBJECT.”

The third difference is a substantial one. The claim is that the i-within-i accessibility condition of SUBJECT is not universal across languages and that it should not be included in the universal binding principle but should be posited as a language-particular parameter in the grammar of the language where it is required. In other words, we propose that the i-within-i accessibility condition of SUBJECT be turned into a language-particular parameter. For example, in English the i-within-i accessibility condition of SUBJECT is necessary as we see in the contrast of (3a) and (3b).

(3) a. *The boys thought that each other was smart.

b. The boys thought that each other’s pictures were on sale.

In other words, we can say that (2) would rule out both (3a) and (3b), but that (3b) is saved by the English-particular parameter of the i-within-i accessibility condition of SUBJECT.

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1 Some native speakers of English find sentences like (3b) slightly unnatural and, if the picture noun is replaced by a non-picture noun as in (i) below, they find such sentences more unnatural.

(i) ?? The boys thought that each other’s girl friends were pretty.

Therefore, even for English the i-within-i accessibility condition of SUBJECT is not always working in full force.
On the other hand, for languages like Dutch and Italian the i-within-i accessibility condition of SUBJECT is very weak as we see in the marginality of (6) and (9).

Dutch5:

(4) Zijj denken dat zijj van elkaarj, houden.
   they think that they of each other love
   (Theyi think that theyj love each otherj,.)

(5) Zijj zijn varbaasd over hunj liefde voor elkaarj,.
   they are surprised at their love for each other
   (Theyi are surprised at theirj love for each otherj,.)

(6) ??Zijj denken dat elkáarsj verhalen interessant waren.
   they think that each other stories interesting are
   (Theyi think that each other'sj stories are interesting.)

Italian5:

(7) Conosconoi gli amicI l'uno dell'altroj.
   they know friends one of the other
   (Theyi know each other'sj friends.)

(8) *Conosconoi l'odio di Gianni l'uno per l'altroj.4
   they know hatred of John each for other
   (Theyi know John's hatred to each otherj.)

(9) ??Sanno, che certi libri l'uno aproposito dell'altroj sono interessanti.
   they know that some books one about of the other are interesting
   (Theyi know that some books about each otherj are interesting.)

On the other hand, languages like Russian and Norwegian show no effect of the i-within-i accessibility condition of SUBJECT at all, as we see in the ungrammaticality of (12) and (16).

Russian5:

(10) Onij chitali zhaloby drug na drugaj.
    they read complaints each on other
    (Theyi read complaints against each otherj.)

(11) *Onij chitali moi zhaloby drug na drugaj.
    they read my complaints each on other
    (Theyi read my complaints against each otherj.)

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5 These Dutch sentences and their grammaticality judgements are due to Eric J. Reuland.

These Italian sentences and their grammaticality judgements are due to Rita Manzini.

See G. Cinque (1980) for the claim that in Italian the prepositional phrase like di Gianni in (8) should be considered as the subject of the NP with respect to the Specified Subject Condition.

These and other Russian sentences and their grammaticality judgements in this paper are due to G. Rappaport (1982).
(12) *Dissidenty, znali chto stat'i drug o druge, pojavilis' v zapodnoj
dissidents knew that articleless each about other appeared in western
preisse.
press
(The dissidents knew that articles about each other had appeared in the
Western press.)

Norwegian⁶:

(13) Dei leste klager mot hverandre,.
they read complaints against each other
(They read complaints against each other.)
(14) *Dei leste mine klager mot hverandre,.
you read my complaints against each other
(*They read my complaints against each other.)
(15) *Dei skryter over at hverandre er intelligente.
you boast over that each other is intelligent
(They boast that each other is intelligent.)
(16) *Marxistene visste at artikler om hverandre hadde stått i
Marxists know that articles about each other had been in
vestlige auiser.
western newspaper
(The Marxists knew that articles about each other had appeared in
western newspapers.)

Here we see three degrees of the effect of the i-within-i accessibility condition
of SUBJECT: some effect for languages like English, very weak effect for languages
like Dutch and Italian, and no effect for languages like Russian and Norwegian. This
is a clear indication that the i-within-i accessibility condition of SUBJECT is a lan-
guage-specific parameter rather than a universal condition.

In languages like Korean and Japanese, which lack AGR⁷, we expect no effect
of the Tensed-S Condition and the problem of the i-within-i accessibility condition of
SUBJECT even does not arise, as we see below. Note that (2) correctly accounts for
the following Korean and Japanese data.

⁶ These Norwegian sentences and their grammaticality judgement are due to Kristi Koch
Christensen.
⁷ We assume that languages like Korean and Japanese lack AGR simply because there is no
AGR morpheme at all in such languages.
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Korean:

(17) kitilj-in kitilj-i səloj-i* i-lil salangha-nin-kəs-il kippəha-n-ta.
    they-TOP they-NM each other-AC love-ASP-COMP-AC pleased-ASP-DEC
    (They, are pleased that they love each otheri* ,.)

(18) kitilj-in kitilj-iy səloj-i* i-e təəhan salang-îl al-ko iss-ta.
    they-TOP they-'s each other-LOC about love-AC know is-DEC
    (They, know theirj love to each otheri* ,.)

(19) kitilj-in səloj-ka yəngliha-ta-ko səngkəkha-n-ta.
    they-TOP each other-NM clever-DEC-COMP think-ASP-DEC
    (They, think that each otherj is clever.)

(20) kitilj-in səloj-iy ai-ka yəngliha-ta-ko səngkəkha-n-ta.
    they-TOP each other-'s child-NM clever-DEC-COMP think-ASP-DEC
    (They, think that each other'si child is clever.)

Japanese:

(21) karera-; wa karera-j ga tagaij-i* ni aisiteiru-to omotteiru.
    they-TOP they-NM each other-DAT love-COMP think
    (They, think that theyj love each otheri* ,.)

(22) karera-; wa tagaij- ga riko da-to omotteiru.
    they-TOP each other-NM smart-COMP think
    (They, think that each otherj is smart.)

(23) karera-; wa tagaij- no ko-ka riko da-to omotteiru.
    they-TOP each other-'s child-NM smart-COMP think
    (They, think that each other'si child is smart.)

The above data of Korean and Japanese support our initial assumption that these languages lack AGR, since without the assumption the data would be difficult to be

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* The Korean reciprocal anaphor səlo has three meanings, "reciprocal," "respective," and "joint." Thus, (i) has three readings as indicated below.

(i) kitilj-in səloj-iy ai-lil salangha-n-ta
   they-TOP 's child-AC love ASP-DEC
   a. They, love each other's children.
   b. They, love theirj respective children.
   c. They, love theiri (own) children.

səlo in the "reciprocal" and "respective" readings obeys the principle (2) but səlo in the "joint" reading does not. Here we are considering only the "reciprocal" reading. When the antecedent of səlo is not in the same clause as səlo as in (19) and (20), the predominant reading is a "respective" one but the "reciprocal" reading is also possible.

The abbreviations are as follows: TOP=Topic Marker; NM=Nominative Marker; AC=Accusative Marker; DAT=Dative Marker; LOC=Locative Marker; COMP=Complementizer; ASP=Aspect Marker; DEC=Declarative Marker.

* These and other Japanese sentences and their grammaticality judgements in this paper are due to Kenichi Takemura.
accounted for in any motivated way.

Chinese has a reciprocal anaphor only in a genitive position, as we see below.\(^\text{10}\)

**Chinese**\(^{11}\):

(24) \(\text{tamen}_i \text{ xiangxin tamen}_j \text{ ai bic}_{i,j} \text{ de erzi.}\)

\(\text{they think they love each other's child}\)

(They\(_i\) think that they\(_j\) love each other's \(s_{i,j}\) children.)

(25) \(\text{tamen}_i \text{ xiangxin bic}_{i} \text{ de erzi de congming.}\)

\(\text{they think each other's child all clever}\)

(They\(_i\) think that each other's \(s_{i}\) children are all clever.)

The above data about Chinese reciprocal anaphor can be accounted for by (2), given the assumption that Chinese does not have AGR.\(^\text{12}\)

Kannada has the overt verb agreement with the subject but apparently the verb agreement does not count as AGR with respect to anaphor-binding, as we see below.

**Kannada**\(^{13}\):

(26) \(\text{a} \text{ibbaru hudugaru} \text{ obbarinnobbara} \text{ bagge pritiyannu kuritu}\)

\(\text{the two boys} \text{ each other-GEN about love-AC about}\)

\(\text{mātadidaru}.\)

\(\text{talk-PAST-3PL}\)

(The two boys\(_i\) talked about love of each other.)

(27) \(\ast \text{a} \text{ibbaru hudugaru} \text{ obbarinnobbaru} \text{ bagge namma pritiyannu}\)

\(\text{the two boys} \text{ each other-GEN about our love-AC}\)

\(\text{kuritu mātadidaru}.\)

\(\text{about talk-PAST-3PL}\)

(The two boys\(_i\) talked about our love toward each other.)

(28) \(\text{a} \text{ibbaru hudugaru} \text{ obbarannobbaru} \text{ buddhivantar-endu tilididdāre}.\)

\(\text{the two boys} \text{ each other clever-PL-that think-PAST-3PL}\)

(The two boys\(_i\) thought that each other\(_i\) was clever.)

(29) \(\text{a} \text{ibbaru hudugaru} \text{ obbarinnobbaru} \text{ snēhite sundariy-endu}\)

\(\text{the two boys} \text{ each other-GEN friend pretty-PL-that}\)

\(\text{tilididdaru}\.\)

\(\text{think-PAST-3PL}\)

(The two boys\(_i\) thought each other's\(_i\) girl friends were pretty.)

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\(^{10}\) In other positions, a reciprocal adverb is used.

\(^{11}\) These and other Chinese sentences and their grammaticality judgments in this paper are due to Sinjen Chu.

\(^{12}\) See Huang (1982) for the claim that Chinese does not have AGR.

\(^{13}\) These Kannada sentences and their grammaticality judgments are due to S. N. Sridhar.
The above Kannada data can be accounted for by (2), if we assume that Kannda does not have AGR even if its verbs show some overt agreement with the subject. Thus, it cannot be said that any overt subject-verb agreement always constitutes AGR with respect to anaphor-binding. In fact, the above assumption that Kannada does not have AGR despite some overt subject-verb agreement is further supported by the reflexive-binding phenomena, as we see later.

Many languages express reciprocity not by a reciprocal anaphor but by an adverb as in the Chinese example (30), by a clitic as in the French example (31), or by a suffix as in the Warlpiri example (32).

(30) tamen, xiangxin tamen, huxiangj, ai.
they think they reciprocally love
(They think they love reciprocallyj, ai.)

(31) Les garçons, se, regardent.
the boys, self see
(The boys see themselves/each other.)

(32) narka-tjara-lu, ka-pala-njanu, patji-ni.
man-DUAL-ERG PRES-33-REF cut-NonPast
(The two men are cutting themselves/each other.)

Note, however, that all the non-anaphor reciprocal phenomena can be also accounted for by (2) if the non-anaphor reciprocal elements are also considered as some kind of anaphors.

To summarize, by assuming the i-within-i accessibility of SUBJECT as a language-particular parameter, we may formulate the anaphor-binding principle for reciprocals as simple as (2), and the non-observance of the Tensed-S Condition or the NIC in languages like Korean, Japanese, Chinese, Kannada, etc., is accounted for by assuming that these languages do not have AGR with respect to anaphor-binding.\(^{14}\)

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\(^{14}\) We have been discussing cases where reciprocals are bound by a subject, but according to (2) reciprocals may also be bound to a non-subject, as we see below.

**Russian:**

(i) Ona zakryvala ix, drug ot drugi.
it blocked them one from other
(It blocked them from each other.)

**Korean:**

(ii) kitil-in kitil-il salo, eke sokæha-ass-ta.
they-TOP they-AC each other-DAT introduce-PAST-DEC
(They introduced them to each other.)
2. Unmarked Reflexives

The reflexives across languages that obey the same anaphor-binding principle as the reciprocals like English reflexives will be called unmarked reflexives. Thus, the anaphor-binding principle for unmarked reflexives will be essentially the same as the Reciprocal-Binding Principle (2), as we see in (33).

(33) Unmarked Reflexive-Binding Principle
An unmarked reflexive is bound in the c-domain of its c-commanding minimal SUBJECT.

All the considerations for (2), including the language-particular parameterization of the i-within-i accessibility condition of SUBJECT, also apply to (33). The unmarked reflexives across languages are "phrasal reflexives" in the sense that they always include a morpheme meaning something like "self" like English reflexives, as we see below.

Dutch (Everaert 1980):
(34) Arnoldi hoorde Mariannej op zichzelfj,*i mopperen.
    heard about oneself grumble
    (Arnoldi heard Mariannej grumble about herselfj,*i.)

German (Reis 1976):
(35) Hansi lasst die Jungenj [PROj für sich selbstj,*i arbeiten].
    lets the boy for oneself work
    (Hansi lets the boyj work for himselfj,*i.)

Swedish (Anward 1974):
(36) Hanii bad hennej [PROj tvätta sig självi,*i].
    asked her wash oneself
    (Hani asked herj to wash herselfj,*i.)

Italian (Napoli 1978):
(37) Ho rivelato Giorgioi a sé stessoi.
    I revealed George to himself
    (I revealed Georgei to himselfi.)

Norwegian (Halvorsen 1982):
(38) Hanii ba Knutj [PROj snakke om seg selvj,*i].
    he asked talk about oneself
    (Hei asked Knutj to talk about himselfj,*i.)
(39) Hanii ba Knutk [PROk snakke med Olaj om ham selvj,*i,*k].
    asked talk with about himself
    (Hei asked Knutk to talk with Olaj about himselfj,*i,*k.)
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_Ewe_ (Clements 1975)

(40) Kofi _i_ be Koku _j_ 15 e 4okui _i_ , *i._

    say love him self  

(Kofi _i_ said that Koku _j_ loved himself, *i_.)

Being a phrasal reflexive, the unmarked reflexive is rarely used as a dummy grammatical morpheme like the inherent reflexive. For example, in Dutch and Norwegian the inherent reflexive is always a marked reflexive and not an unmarked reflexive, even if its syntactic context is for an unmarked reflexive, as we see below.15

_Dutch_ (Everaert 1980):

(41) Jan _i_ vroeg Karel _j_ [PRO _j_ zich _i_ , *i_/zichzelf *i_ , *i_ te schamen].

    asked            be ashamed

(John asked Karel to be ashamed.)

_Norwegian_ (Halvorsen 1982):

(42) Ola _i_ bad Knut _j_ [PRO _j_ skamme seg _i_ , *i_/seg selv *i_ , *i_].

    asked            be ashamed

(Ola asked Knut to be ashamed.)

There are other more language-specific constraints on the occurrence of the unmarked reflexives. For example, in Italian _stesso_ can be omitted in some contexts as we see in the following example.

(43) Giorgio _i_ mi ha invitato per _è_ (stesso), _i_. (Napoli 1978)

    me invited for

(George _i_ invited me for himself _i_.)

In Norwegian, _seg selv_ should be bound to a subject and not to a non-subject, as we see in (44), whereas _ham selv_ should be bound to a non-subject and not to a subject as we see in (39).

(44) Han _i_ fortalte Knut _j_ om _seg selv _i_ , *j_.

    told about

(He _i_ told Knut _j_ about himself, *j_.)

Note, however, that despite these language-general or language-specific restrictions we can still maintain that these unmarked reflexives obey the Unmarked Reflexive-Binding Principle (33) in principle.

15 We will discuss marked reflexives in the next section. It seems that in the languages like English where there are no marked reflexives, the unmarked reflexive is used as the inherent reflexive, as we see in the English example below.

(i) You should behave yourself.
3. Marked Reflexives

All the reflexives across languages that are not unmarked reflexives will be called "marked reflexives". Thus, marked reflexives are "nonphrasal" reflexives and cannot be characterized by the principle (33). Specifically, marked reflexives generally do not obey the SSC\textsuperscript{16}; thus SUBJECT should be parameterized as AGR only in terms of Chomsky's binding theory. Furthermore, the AGR for marked reflexives has to be further parameterized, as discussed below, and the antecedent of a marked reflexive has to be a subject, unlike unmarked reflexives or reciprocals.\textsuperscript{17} Thus, as an initial approximation, we may characterize marked reflexives as follows.

(45) Marked Reflexive-Binding Principle
A marked reflexive is bound in the c-domain of its c-commanding minimal SUBJECT.

(i) SUBJECT = AGR only\textsuperscript{18};
(ii) AGR is parameterized for individual languages:
   (a) INFL of a finite clause for Russian, Hindi, Norwegian, Gothic, Latin, etc.
   (b) INFL of an indicative clause for Icelandic, Italian, etc.
   (c) COMP for Dutch, etc.
   \vdots
(iii) [+marked] reflexive $\rightarrow$ [+subject control]

The parameterization of AGR for marked reflexives (45ii) reminds us of Chomsky's (1977) Propositional-Island Condition, whose unmarked version might be assumed to be the Tensed-S Condition or the Nominative Island Condition. Indeed, the majority of marked reflexives across languages take the INFL of the finite clause as the AGR for their binding domains. As for the subject-control property of the marked reflexives (45iii), assuming that the unmarked antecedent is the most prominent NP in the available domain, i.e., the subject, we may posit the following principle.

(46) An anaphor should have either the unmarked domain (as defined in (2) or (33) above) or the unmarked antecedent.

Indeed, (46) is supported by the following contrast in the non-local use of English reciprocals.\textsuperscript{18}

(47) a. They\textsubscript{1} knew that each other's\textsubscript{1} pictures were on sale.

\textsuperscript{16} There are some exceptional cases where marked reflexives do obey the SSC, which will be discussed later.

\textsuperscript{17} The notion of subject as the antecedent of the marked reflexive will be further elaborated later on.

\textsuperscript{18} This was pointed out to me by Noam Chomsky.
b. *I told them, that each other's pictures were on sale.

Since (46) is a principle independent of (45), it does not have to be stipulated as part of the Marked Reflexive-Binding Principle. In fact, (46) will be further expanded to accommodate the subject-obviation property of the marked pronominals, as we will discuss later.

The examples of the marked reflexive that takes the INFL of a finite clause as the AGR for its binding domain are as follows.

**Russian** (Rappaport 1982):

(48) Vanja, znaet chto Volodja ochen' ljubit sebja,*i.

_know that love very much self_

(Vanja knows that Volodja loves self,*i very much.)

(49) Professor, poprosil assistenta [PRO chitat' svoji,i doklad].

_asked assistant read self's,i report_

(The professor asked his assistant to read self's,i report.)

**Hindi** (Harbert 1982a):

(50) Ashok,i ne kaha kii Lalita,j apnei,*i liye cha kareegi.

_said that self for tea make_

(Ashok said that Lalita would make tea for self,i.)

(51) Ashok,i ne Lalita,j se [PRO apnei,i liye cay banane ko] kaha.

_with self for tea to make asked_

(Ashok asked Lalita to make some tea for self,i.)

**Norwegian** (Halvorsen 1982):

(52) *Olai vet vi beundrer segi.

_know we admire self_

(Olai know that we admire self.)

(53) Knuti ba Ola,j [PRO korrigere segi,*i].

_asked correct self_

(Knut asked Ola to correct self,i.)

(54) *Ola,j korrigerer segi.

_correct self_

(Ola corrects self.)

(48), (50) and (52) show that the marked reflexives of these languages should be bound within their minimal tensed clause boundary. On the other hand, (49) and (51) show that marked reflexives of languages like Russian and Hindi may be bound by any subject within their minimal tensed clause boundary, whereas (53) and (54) show that marked reflexives of languages like Norwegian may not be bound by the subject of its immediate minimal clause whether it is tensed or not, though it can be
bound by the subject of the matrix tensed clause that dominates a non-tensed embedded clause. According to Harbert (1982b), Gothic marked reflexives are the Russian type, and according to Clements (1975), Latin marked reflexive is the Norwegian type. This difference between the marked reflexives of languages like Russian and Hindi and those of languages like Norwegian seems to be due to the fact that the languages like Norwegian have the unmarked reflexives in addition to the marked reflexives whereas the languages like Russian and Hindi do not. In other words, it seems that the unmarked reflexives are specialized for the unmarked anaphor-binding domain and that the additional marked reflexives may not be used in that unmarked domain. However, this is not always the case, as we will discuss later.

The marked reflexives of languages like Polish or Swedish are just like those of languages like Russian and Hindi except that the former obey the SSC if the head noun of the NP is a predicative one like a deverbal noun, as we see below.

**Polish** (Willim 1982):

(55) JaniT kazat Mariej [PROj napisać artykuł o sobieli,].  
(JohniT told Mariej to write an article about selfi,j.)

(56) JaniT czyta [jej książki o sobieli,].  
(JohniT is reading herj book about selfi,j.)

(57) MariaJ nie rozumie [jegoj nagłej niechęci do siebiei,].  
(MaryJ does not understand hisj sudden resentment to selfi,j.)

**Swedish** (Anward 1974):

(58) HanII bad honomJ [PROj klippa sig.,].  
(HeJ asked himi to cut self’si hair.)

(59) HanII tillät [hansJ offentliggörande av sina*i, privatbrev].  
(HeJ allowed hisi publication of self’si,*i private letters.)

It seems that the marked reflexives of languages like Polish and Swedish are in transition from the unmarked reflexive-binding pattern to the marked reflexive-binding pattern; thus we have to assume that the marked reflexives of these languages somehow make use of the unmarked reflexive-binding principle for cases like (57) and (59).19

The marked reflexive of a language like German is similar to that of a language like Polish and Swedish, the only difference being that the former observes the SSC

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19 It is possible to speculate that this exceptional unmarked binding of the marked reflexives is typologically insecure and that it may be disappearing in the course of time.
if the reflexive is a subcategorized constituent of the embedded verb, as we see below.

German (Reis 1976):

(60) Hans; lasst die Jungen \([\text{PRO}_j \text{ für sich}_t \text{ arbeiten}]\).
    lets the boy for self work
    (Hans; lets the boy work for self)

(61) Hans; lasst Fritz \([\text{PRO}_j \text{ sich}_t \ast \text{ töten}]\).
    lets self kill
    (Hans; lets Fritz kill self)

In (60) \textit{für sich} is not a subcategorized constituent of the embedded verb whereas in (61) \textit{sich} is a subcategorized constituent of the embedded verb \textit{töten}. German seems to be another language where the marked reflexive partially makes use of the unmarked reflexive-binding principle.

Icelandic takes the INFL of the minimal indicative clause as the AGR for the binding domain of the marked reflexive, as we see below.

Icelandic (Thrainsson 1978):

(62) Jón; skipaði Harold \([\text{að PRO}_j \text{ raka sig}_t]\).
    John ordered Harold to shave self
    [+infini]
    (John ordered Harold to shave sig).

(63) Jón; segir \([\text{að María} \text{ viti} [\text{að Haroldur} \text{ vilji} [\text{að Bill}]
    John says that Mary knows that Harold wants that
    [+indic] [+subjunc] [+subjunc]
    með sig, τ, ἁ, τ])
    hurts self
    [+subjunc]
    (John says that Mary knows that Harold wants that Bill hurts self)

However, the Icelandic marked reflexive \textit{sig} behaves just like an unmarked reflexive within the unmarked reflexive-binding domain; that is, it can be bound to a non-subject as well as to subject in the unmarked reflexive-binding domain, as we see below.

(64) Jón; sendi Harold \(föt \text{ á sig}_t\).
    John sent Harold clothes for self
    (John sent Harold clothes for self)

Therefore, it is as if the Icelandic marked reflexive \textit{sig} plays a double role: the role of the unmarked reflexive as well as the marked reflexive. In fact, Icelandic does not have a separate unmarked reflexive.

The Italian situation is a little more complex, but roughly speaking, the Italian
marked reflexive also takes the INFL of the minimal indicative clause as the AGR for its binding domain, as we see below.

*Italian* (Napoli 1978):

(65) La signora dice che io giaccia presso di sé.
    the woman says that I lie near self
    (The woman orders that I lie near self.)

(66) La signora me dice di giacere presso di sé.
    the woman me say to lie near self
    (The woman orders me to lie near self.)

(67) *La signora dice che io giaccio presso di sé.
    the woman says that I lie near self
    (The woman says that I am lying near self.)

The Dutch situation is also rather complex, but the major condition for the marked reflexive *zich* is that it does not obey the SSC when it is a part of the non-subcategorized constituent, or PP, of the so-called A.c.I.-construction, a complement clause without a COMP, as we see in the following.

*Dutch* (Everaert 1981):

(68) Jan weet dat hij zich [*i wast.
    John knew that he self washed
    (John knew that he washed self.)

(69) Jan vroeg Karel [*i te wassen].
    John asked self to wash
    (John asked Karel to wash self.)

(70) Jan liet Karel [*i wassen].
    let self wash
    (John let Karel wash self.)

(71) Jan liet Karel [*i praten].
    let about self talk
    (John let Karel talk about self.)

The reason why in (71) *zich* may not be bound to the embedded subject is due to an independent condition that when the marked reflexive *zich* is the object of a PP it cannot be bound to the immediate subject, as we see in the following.

(72) Jan vroeg Karel [*i te praten].
    asked about self to talk
    (John asked Karel to talk about self.)
On the other hand, (70) shows that when the marked reflexive *zich* is a subcategorized constituent of the verb it obeys the SSC even if it is in a so-called A.c.l.-construction, which reminds us of the German situation. Thus, the conditions for the marked reflexive *zich* are quite complex, but as the contrast between (71) and (72) clearly shows the COMP plays a major role in defining the binding domain for *zich*. In other words, one major condition for *zich* is that the AGR for its binding domain is COMP.\(^{20}\) Note that the complement clauses of (68), (69) and (72) contain a COMP, but those of (70) and (71) do not.

From the above survey of the marked reflexives of several languages, we can draw the following generalization. It seems that the marked reflexives across languages in general disobey the SSC with some language-specific exceptions, which are to be accounted for in some language-particular ways, but crucially obey some type of the Propositional-Island Condition that can be characterized by a parameterization of the notion of AGR for binding. In other words, the Marked Reflexive-Binding Principle (45) seems to be essentially a correct characterization of marked reflexives across languages. Note that a clitic reflexive and an affixal reflexive as illustrated in the French example (31) and the Warlpiri example (32), which are repeated below, also conform with (45) since they are necessarily bound in the immediate tensed clause.

(31) Les garçons se regardent.
    the boys self see
    (The boys see themselves.)

(32) ɲarka-tjara-lu; ka-pala-njani; patji-ɲi.
    man-DUAL-ERG PRES-33-REF cut-Non Past
    (The two men are cutting themselves.)

If we accept (45), we account for the seemingly unbounded reflexive-binding in languages like Korean, Japanese, and Kannada illustrated below.

*Korean:*

(73) John-in [Bill-i [Mary_i-ka [Tom_i-iy caki_{i,i,i,i,i,i} e tehan thæto]-lil
    -TOP -NM -NM -'s self toward attitude-AC
    hate-ASP-DEC-COMP think-ASP-DEC-COMP believe-ASP-DEC

(John_i believes [that Bill_j thinks [that Mary_k hates [Tom_i's attitude toward
    self_{i,i,i,i,i,i}s]])]}

\(^{20}\) A close relationship between AGR (or INFL) and COMP was pointed out in Stowel (1981).
Japanese:
(74) Johni-wa [Billi-ka [Mary\'-no zibuni,i,k-ni taisuru taito]-o
TOP -NM -'s self-DAT toward attitude-AC
hinansita-to] omette iru.
criticize-COMP think
(Johni thinks [that Billi criticized [Mary's attitude toward self,i,k]].)

Kannada (Mohanan 1982):
(75) [[[taanui,i,k aanayennu kiljdalendu] amma,i magalige heeljdalendu]
self elephant pinch-PAST-COMP mother daughter tell-PAST-COMP
raani,i cintisdalendu] aa hengasu,n nanna hendatiyenndu
queen think-PAST-COMP that woman my wife
nambisidalu.
believe-cause-PAST
(The woman convinced my wife [that the queen thought [that the
mother told the daughter [that self,i,k pinched the elephant]]].)

Essentially the reflexives of these languages are bound by any c-commanding subject. This phenomenon can be accounted for in the following way. According to our characterization of the unmarked and marked reflexives, these reflexives of Korean, Japanese and Kannada are marked ones, and these languages do not have AGR as we discussed earlier with respect to reciprocal-binding. Thus, if we assume that these languages do not have any language-specific exceptional features with respect to the Marked Reflexive-Binding Principle (45), this principle predicts that the marked reflexives of these languages do not have any binding domains simply because they do not have AGR; and the subject-control property of these marked reflexives is determined by the principle (46), which was shown to be independent of the principle (45) earlier.

Two other languages that are known to lack AGR, Chinese and Malayalam, also show the unbounded reflexive-binding. Their reflexives are marked ones according to our criterion and in principle they can be bound to any c-commanding subject just like the reflexives of Korean, Japanese and Kannada. But Chinese and Malayalam reflexives have some language-particular exceptional restrictions. Chinese reflexive zi/ji may be bound to any c-commanding subject only when it occurs as the subject or part of the subject phrase; otherwise it can be bound only to its immediate subject, as we see below.

Chinese:
(76) Johni xiangxin Billi dui Sam\_k shuo zi/ji,i,k taoyan Mary.
believe to say self hate
(Johni believes that Billi said to Sam\_k that self,i,k hated Mary.)
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(77) John; xiangxin Bill; shuo dui Sam; ziji; wife hate
(John; believes that Bill; said to Sam; that self’s wife hated Mary.)

(78) John; xiangxin Bill; shuo Mary; taoyan ziji; wife hate
(John; believes that Bill; said to Sam; that Mary; hates self.)

Malayalam has two reflexives swa and {aan. According to Mohanan (1982), swa has the same restriction as Chinese ziji discussed above, and {aan has the restriction that it cannot be bound to the subject of the minimal S or NP that contains it, as we see below.

(79) [[moohan; {aan; nulli enna] ammaju; acchanoota; paraanu enno
Mohan self pinched that mother father said that
king felt
(The king; felt that the mother; told the father; that Mohan; pinched self.)

Thus, we can say that, despite these language-particular restrictions, the reflexives of Chinese and Malayalam conform with the Marked Reflexive-Binding Principle (45) in principle, given the fact that Chinese and Malayalam lack AGR.

To summarize, so far we have proposed three anaphor-binding principles: the Reciprocal-Binding Principle (2), the Unmarked Reflexive-Binding Principle (33) and the Marked Reflexive-Binding Principle (45). These three principles can be incorporated into one principle (80) along with the independent principle (46) on the subject-control property of anaphors of the marked domain.

(80) Anaphor-Binding Principle
An anaphor is bound in the c-domain of its c-commanding minimal SUBJECT.

(i) SUBJECT is parameterized:
(a) SUBJECT = AGR or subject for unmarked binding (reciprocals, unmarked reflexives).
(b) SUBJECT = AGR only for marked binding (marked reflexives).

(ii) AGR for marked binding is parameterized:
(a) AGR = INFL of a finite clause (for Russian, etc.)
(b) AGR = INFL of an indicative clause (for Icelandic, etc.)
(c) AGR = COMP (for Dutch, etc.)

For the above principle (80) to work really for individual languages, there should
be other numerous language-particular conditions and parameters, including the pa-
rameter of the i-within-i accessibility condition of SUBJECT, in addition to independent
principles like (46); but the principle (80) seems to be the basic properties that cha-
racterize anaphors in human languages, i.e., a part of the UG for anaphor-binding.
We suggest here that if NP traces and PRO’s are really anaphors, NP-traces and the
locally bound PRO’s naturally belong to the unmarked anaphors, and the non-locally
bound PRO’s are cases of peripheral anaphor-binding as Manzini (1983) argues.

4. Peripheral Anaphor-Binding

Our discussion so far has been concerned only with core syntactic anaphor-
binding. Languages often allow examples ruled out by the syntactic principles to be
saved by some peripheral anaphor-binding when certain contexts are provided. For
example, sentences like (81) are ruled out by our syntactic principle (80), since there
is no antecedent available, but due to the generic context of the sentence the reflexive
oneself is given the arbitrary reference interpretation and the sentence becomes well-
formed.21

(81) Pictures of oneself are always disappointing.

Similar examples are not difficult to find in other languages. For example, the
anaphors in the examples like the Russian sentence (82) and the Korean sentence (83)
receive the arbitrary reference reading for exactly the same reason as the English
sentence (81).

(82) V xokkee, kak i v drugix vidax sporta, svoj steny igrajut
in hockey as in other sports self’s wall play
znachitel’nuju rol’.
significant role
(In hockey, as in other sports, self’s walls play a significant role.)

(83) [salo1-ka salo1-lil toup-nin-kos] in cohin il-1-ta.
each other-NM each other-AC help-ASP-COMP-TOP good thing-is-DEC
(Each other; helping each other; is a good thing.)

In (83) the second salo is bound by the first salo, but there is no syntactic binder
for the latter.

Given proper discourse contexts, an anaphor without a proper syntactic binder
may be discourse-bound, as we see in the following Korean example.

(84) A: John,-i salam-il ponge-oss-ni?
-NM man-AC send-PAST-Q
(Did John; send a man?)

21 It is difficult to define “the generic context” explicitly. But in the case like (81) it is clear
that words like “always” and “oneself” and the present tense constitute the generic context.
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B: ani, caki₁-ka cikcøp o-əss-ta.
No, self-NM in person come-PAST-DEC
(No, self, came in person.)
The same is the case with Japanese, Chinese, Turkish and Kannada.

In many languages, the marked reflexive may often be bound to a non-c-commanding subject, as in the following Korean example.

(85) [John₁-i caki₁,₁-lil miwɔha-nin-kæs]-i Mary₁-lil silphike ha-əss-ta.
   NM self-AC hate-ASP-COMP-NM -AC sad do-PAST-DEC
   ([That John₁ hates self₁,₁] made Mary₁ sad.)
Note that in (85) caki can be bound to not only the c-commanding subject John but also the non-c-commanding experiencer NP Mary. The same is the case with Japanese and Chinese.

In languages like Russian and Polish, the non-subject peripheral anaphor-binding is extended even to NP's of θ-roles other than the experiencer, as in the following Russian example.

(86) Dļja sebjja, ej_i nichego ne nuzhno.
   for self her-DAT nothing is necessary.
   (For herself, to her, nothing is necessary.)
In (86) the reflexive is bound to the non-c-commanding dative NP.

In some languages the marked reflexive may often be bound to a non-c-commanding D-structure subject as well as the c-commanding S-structure subject, as in the following Russian example.

(87) Rebenok₁ byl otprablen Annoj Pavlovnoj₁ k svoim₁,₁ sestram.
   child was sent self's sisters
   (The child₁ was sent by Anna Pavlovna₁ to self's₁,₁ sisters.)
Lastly, the marked reflexive may be bound to a non-c-commanding subject of an NP if the head noun of the NP is a predicative one like a deverbal noun, as in the following Korean example.

(88) John₁-iy mitim-in caki₁-ka yongkamha-ta-nin-kæs-i-ta.
   -'s belief-TOP self-NM brave-DDEC -COMP-is-DDEC
   (John's₁ belief is that self₁ is brave.)
This sentence is interpreted as “John₁ believes that self₁ is brave,” in which in fact John c-commands the reflexive. This type of semantic peripheral anaphor-binding is attested in various languages including Malayalam (Mohanan 1982) and Icelandic (Maling 1982).

Thus, it seems that peripheral anaphor-binding interacts with various non-syntac-
tic factors in complex ways and varies among different languages and dialects and often even among individuals. However, it is not totally chaotic, as we have discussed above. Whatever the correct generalizations may be, they are not likely to affect the Anaphor-Binding Principle (80). Even if the generalizations are to be somehow accommodated in our grammar, they should be at a level other than the level of S-structure where the core syntactic binding principles apply. Therefore, (80) is a valid core anaphor-binding principle even if it cannot cover the above-discussed peripheral anaphor-binding phenomena.

5. Pronominals

As Chomsky's (1981) binding theory, as summarized in (1) earlier, suggests, the anaphor-binding principle is closely related with the pronominal disjoint reference principle, and thus the modification of one would naturally affect the status of the other. In fact, Chomsky's binding theory (B) for pronominal disjoint reference may also be extended in a similar way as we have extended his binding theory (A) for anaphor-binding. We will distinguish between unmarked and marked pronominals. For unmarked pronominals we posit (89).

(89) Unmarked Pronominal Disjoint Reference Principle
A pronominal is free in the c-domain of its minimal SUBJECT that contains its governor.

(i) \( \alpha \) is a minimal SUBJECT of \( \beta \), iff \( \alpha \) is the SUBJECT in the minimal category that contains \( \beta \) and a SUBJECT. (\( \beta \) may also count as a SUBJECT.)

The difference between the domain defined by (89) and the one defined by the Unmarked Reflexive-Binding (33) is that the former lacks the c-command accessibility condition of SUBJECT that the latter retains, but the former has to include the governor of the pronominal.22 The pronominals of languages like English, German, Spanish, Korean, Chinese, Japanese, etc., conform with (89), as illustrated below.

(90) The boys saw their pictures.
(91) *The boys saw pictures of them.
(92) *The boys believe them to be smart.

German (Harbert 1982a):
(93) Sie verkauften ihre Bücher.
they sold their books.
(They sold their books.)
(94) Franz bat Paul [PRO ihm zu helfen].
asked him to help
(Franz asked Paul to help him.)


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22 Huang (1982) and Manzini (1983) propose a pronominal disjoint reference domain similar to (89) in effects though not formally.
(95) Franz, bat Paul; [PRO; die Bilder von ihm, zu verkaufen].
  asked the pictures of him to sell
(Franz, asked Paul; to sell the pictures of him,.)

Korean:
(96) John, in ki, iy sajin-il po-ass.ta.
  -TOP he's picture-AC see-PAST-DEC
  (John, saw his picture.)
(97) John, i Tom, il ki,*i,*j-ke sokæha-ass.ta.
  -NM -AC he -to introduce-PAST-DEC
  (John, introduced Tom; to him,.)
(98) John, in Tom, i ki,*i,*j-lil miwàha-n-ta-ko sengkakha-n-ta.
  -TOP -NM he -AC hate-ASP-DEC-COMP think-ASP-DEC
  (John, thinks that Tom; hates him,.)

Japanese:
(99) John, wa kare,-no shashin-o mita.
  -TOP he's picture-AC saw
  (John, saw his picture.)
(100) John, ga Tom, o kare,*i,*j-ni shokaisita.
  -NM -AC he -to introduced
  (John, introduced Tom to him,.)
(101) John, wa Tom, ga kare,*i,*j-o aisite-iru-to omotte iru.
  -TOP -NM he -AC love -COMP think
  (John, thinks that Tom, loves him,.)

As for the marked pronominals, there are two types. The first type takes
the c-domain of the c-commanding SUBJECT as its disjoint reference domain, and the second type is the same as the first type except that SUBJECT is AGR only. Marked pronominals are disjoint in reference only with any c-commanding subject within their disjoint reference domain; that is, they all have the property of the subject obviation. Thus, we posit (102) for marked pronominals.

(102) Marked Pronominal Disjoint Reference Principle
A pronominal is free in the c-domain of its c-commanding minimal SUBJECT.

(i) SUBJECT is parameterized:
(a) SUBJECT = AGR or subject (for Norwegian, etc.)
(b) SUBJECT = AGR only (for Icelandic, etc.)
(ii) [+marked] pronominal → [+subject obviation]

Note that though (102) is similar to the Marked Reflexive-Binding Principle (45), the former does not parameterize AGR; thus in (102) AGR means always the INFL
of a finite clause only. If we assume that the subject is the unmarked disjoint reference target since the subject is the most prominent NP, the fact that marked pronouns always have the subject-obviation property may be reformulated as an independent principle like (103).

(103) A pronominal should have either the unmarked DR domain or the unmarked DR target. (103) and (46) may be incorporated into one principle (104).

(104) An element to be bound or disjoint should have either the unmarked domain or the unmarked antecedent/target.

The first type of marked pronouns for which SUBJECT is AGR or subject are pronouns of languages like Norwegian, Swedish, Polish and Russian, as illustrated below.

**Norwegian:**

(105) *De$_i$ liker deres$_i$ bøker.
they like their books
(They$_i$ like their$_i$ books.)

(106) De$_i$ leste mine klager mot dem$_i$.
they read my complaints against them
(They$_i$ read my complaints against them$_i$.)

(107) *De$_i$ leste klager mot dem$_i$.
they read complaints against them
(They$_i$ read complaints against them$_i$.)

**Swedish** (Anward 1974):

(108) Han$_i$ gav honom$_i$ hans$_i$ motocyklen.
he gave him$_i$ his$_i$ motorcycle
(He$_i$ gave him$_i$ his$_i$ motorcycle.)

(109) Hon$_i$ bad henne$_i$ [PRO$_j$ klippa henne$_i$$_j$].
she asked her$_i$ to cut her$_i$$_j$ hair.
(She$_i$ asked her$_i$ to cut her$_i$$_j$ hair.)

(110) *Hans$_i$ beskrivning av honom$_i$.
his description of him$_i$.
(His$_i$ description of him$_i$.)

**Polish** (William 1982):

(111) Maria$_i$ rozmawia$_i$ z Anii$_j$ o niej$_i$$_j$.
Mary talked to Anna$_j$ about her$_i$$_j$.
(Mary$_i$ talked to Anna$_j$ about her$_i$$_j$.)
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(112) Maria martwi sie ich stosunkiem do niej.
Mary worries over their attitude to her
(Mary worries over their attitude to her.)

The second type of marked pronominals for which SUBJECT is AGR only are pronominals of languages like Icelandic, Hindi, Latin and Gothic, as illustrated below.

Icelandic (Thrainsson 1979):
(113) Jóni rétti Haroldj hansj, *i fót.
John handed Harold his clothes
(John handed Harold his clothes.)
(114) *Jóni skipaði merj að [PRO raka hann].
John ordered me to shave him
(John ordered me to shave him.)
(115) Jóni segir að Maria elski hann.
John says that Mary loves him
(John says that Mary loves him.)

Hindi (Harbert 1982a):
(116) Ashoki ne kaha kii Lalitaj unkei, *i liye cha kareegi.
said that him for tea would-make
(Ashoki said that Lalitaj would make tea for him.)
(117) *Sita; raste bhar unkei gohne girati gai.
way all her jewelry dropping go
(Sita kept dropping her jewelry all the way.)

Latin (Harbert 1982b):
(118) *qui; noluerunt me regnare super eos?
who not-wanted me to-rule over them
(Who did not want me to rule over them?)

If the second type of marked pronominal happens to occur in a language that lacks AGR, the marked pronominal would have no disjoint reference domain and be left with only the subject-obviation property. Indeed, according to Mohanan (1982), Yoruba lacks AGR and its pronominal is disjoint in reference only with any c-commanding subject, as illustrated below.

thought that told that he fat
(Adei thought that Toluj told Segun that he is fat.)

To conclude, the anaphor-binding domain and the pronominal disjoint reference domain cannot be identical, but they share some important properties, which should be captured in our grammar as general or universal properties of the binding theory.
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(Received 12 August 1983)